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# TRAUMATIC LESIONS IN TWO PROTOHISTORIC POPULATIONS FROM OHIO[1]

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ABSTRACT. Skeletal remains of 2 protohistoric Amerindian populations from Ohio were examined for the presence of traumatic lesions. Of the 166 skeletons analyzed, 9.6% (16) exhibited osteological traumas. In 81.3% (13) of these injuries, the causes appeared to have been accidents, and in 18.7% (3) the causes were aggressive activities. The accidental traumas were bony fractures which probably resulted from a fall. The inflicted traumas were produced with weapons. The skeletons from Anderson displayed a significantly ($P < .05$) higher frequency (18.2%) of total trauma than those from Eiden (6.6%). For both of the populations the difference observed between frequencies for inflicted and accidental trauma was not statistically significant. Within each population there was no significant difference between males and females for the frequency of traumas. Also, there was no significant difference in the frequency of traumas for the females of the 2 groups. However, males from Anderson had a significantly ($P < .05$) higher frequency (26.3%) of trauma than males from Eiden (7.0%).

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## INTRODUCTION

Skeletal material from 2 archaeological sites in Ohio was examined for the presence of traumatic bony lesions. A total of 44 burials from the Anderson Village site were obtained from the Division of Archaeology of the Ohio Historical Society. The Lorain County Metropolitan Parks Commission provided 122 burials from the Eiden site.

The Anderson Village represented the Anderson Focus of the Anderson Component in the Fort Ancient Aspect. The village site was occupied between A.D. 1235 to 1400 and was located along the Little Miami River approximately 0.4 km south of Caesar's Creek in South Central Ohio (Griffin 1966).

The Anderson people represented a permanently settled community which derived subsistance from the cultivation of the till plains and river valleys. The archaeology of Anderson was reported by Griffin (1966). Recent archaeological analyses included work by Barber (1978) and Essenpries (1979). An analysis of some of the physical anthropology of the Anderson people was presented by Lallo (1979).

The Eiden site was located 0.8 km north of the confluence of the French Creek and the Black River in the town of Sheffield in Lorain County, Ohio. The site was occupied in A.D. 1490 and initially excavated by A. A. Bungart. Subsequent excavations were carried out by and reported on by Scarry (1973), McKenzie (1973) and Brose and Bier (1979). The physical anthropology of the Eiden people was presented by Lallo and Blank (1977).

Eiden represented a Late Woodland hunting and gathering population which exploited both land and riverine resources. The habitation area suggested a long term occupation with both living and burial areas.

## METHODS AND MATERIALS

A total of 44 burials were recovered from Anderson. Of these, 18.2% (8) were under the age of 15 years and 81.8% (36) were between 15 and 60+ years. Of the 36 adults, 47.2% (17) were females and 52.8% (19) were males. From Eiden, 122 burials were recovered and analyzed. Of this sample, 25.4% (31) were under the age of 15 years while

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74.6% (91) were adults. Within the adult segment, 52.7% (48) were female and 47.3% (43) were male.

A macroscopic examination of the bones was used to identify trauma. In suspected cases, radiographic analysis was employed to supplement the macroscopic examination.

## RESULTS AND DISCUSSION

Traumatic lesions of the bony skeleton can be the result of many different factors. This analysis focuses upon traumas which are the result of an accident (e.g., a fall), or a result of aggressive activity (e.g., the use of weapons). In this report the traumas are represented by a fracture which occurs in a bone. The fracture may or may not be accompanied by serious damage to the surrounding soft tissue. In skeletal analysis, soft tissue damage is almost impossible to identify and will not be discussed in this report. Depending on the severity of the fracture, healing may occur naturally or may require artificial treatment such as a bone splint.

The frequency of bony fractures at Anderson and Eiden is summarized in table 1. Of the 44 burials from Anderson, a total of 18.2% (8) of the individuals exhibited osteological traumas. Of the 8 children in the sample, 12.5% (1) displayed a trauma; whereas, of the 36 adults 19.4% (7) displayed a bony trauma. The difference observed between adults and children was not statistically significant. Of the adults, females accounted for 11.8% (2) of the lesions and males accounted for 26.3% (5). The observed difference was not significant. The frequency of inflicted trauma was 4.6% (2) and 13.6% (6) for accidental trauma. The observed difference was not significant.

TABLE 1

*Frequency of lesions for children and adults from Anderson and Eiden.*

| Anderson | | | |
|---|---|---|---|
| Age (years) | N | No. With Trauma | % With Trauma |
| 0–14.9 | 8 | 1 | 12.5% |
| 15–60+ | | | |
| Females | 17 | 2 | 11.8% |
| Males | 19 | 5 | 26.3% |
| Total | 44 | 8 | 18.2% |
| **Eiden** | | | |
| Age (years) | N | No. With Trauma | % With Trauma |
| 0–14.9 | 31 | 2 | 6.5% |
| 15–60+ | | | |
| Females | 48 | 3 | 6.3% |
| Males | 43 | 3 | 7.0% |
| Total | 122 | 8 | 6.6% |

Of the 8 children recovered from Anderson, only one had an osteological trauma. The mid-shaft of the left femur of a 2-4 year old child had a well-healed fracture which probably resulted from an accident. Of the 17 adult females, 2 exhibited traumas. One was a 35-40 year old female with a fracture on the distal ends of each the left and right ulna (fig. 1). Both fractures were well healed, however, both were slightly misaligned. The degree of healing suggested that the fractures occurred long before death, and the misalignment suggested that difficulty may have been encountered in treating the fracture. It was impossible to determine if both fractures occurred at the same time. Since both radii were missing, it was difficult to determine whether the traumas resulted from a fall during which the individual extended her arms in an attempt to prevent the fall, or from an attempt to ward off a blow by raising the arms to protect the head and face.

The second adult female was approximately 29 years old. Her left ilium was

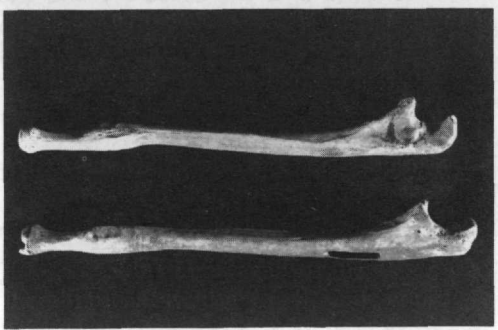

FIGURE 1. A 35-year-old female from Anderson with simple fractures of the distal ends of the left and right ulna.

pierced by a stone projectile point (fig. 2). The point cut through the external skin, and probably entered into the abdominal cavity. Serious damage to blood vessels, nerves, and musculature probably contributed directly to her death.

Of the 19 relatively complete adult males from Anderson, 26.3% (5) displayed bony traumas. Four of the traumas were accidental and probably resulted from a fall. All of the fractures were well healed and none showed signs of misalignment. This suggested that the fractures may have been artifically set. One male (aged 45-50) had a fracture of the distal right femur. Each of 2 males (aged approximately 42 and 45) had fractures of the distal end of the right fibula, and one male (aged 35-40) had a fracture of the distal right tibia. All of the fractures were on the lower limbs and probably reflect male role behavior (e.g., agricultural activity, hunting, or violent sports contests).

The fifth example of adult male trauma was a 35-40 year old individual whose frontal bone had been pierced by a stone projectile point (fig. 3). The point entered the skull approximately 4 cm above the right orbit and entered the forebrain. There were no signs of healing, suggesting that the wound was the direct cause of death.

Of the 122 burials from Eiden, 6.6% (8) displayed osteological traumas. Children exhibited 6.5% (2) of the lesions and adults showed 6.6% (6) of them. The observed difference was not significant. Of the adults, females had 6.3% (3) of the lesions and males had 7.0% (3). The observed difference was not significant. At Eiden the frequency of inflicted trauma was .82% (1), and that of accidental trauma was 5.7% (7). The observed difference was not significant.

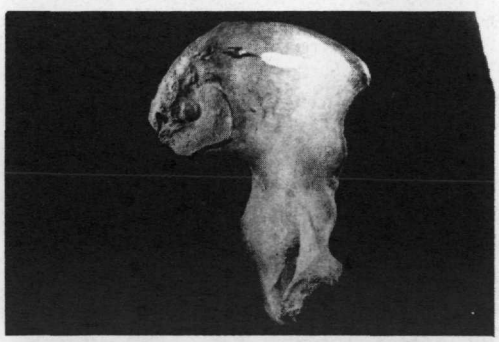

FIGURE 2. A 29-year-old female from Anderson with a projectile point wound of the left ilium.

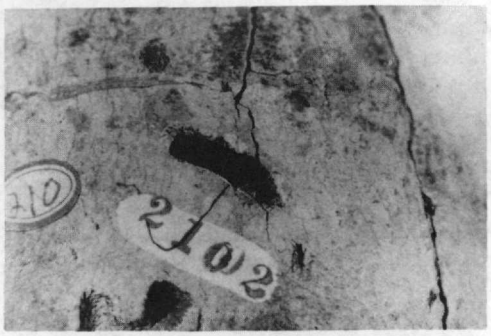


FIGURE 3. A 36-year-old male from Anderson with a projectile point wound of the frontal bone of the cranium.

At Eiden, 2 of the 31 children exhibited bony fractures, which were probably accidental in origin. One occurred on the proximal left femur of an individual about 7 years old and one was found on the distal right tibia of a child approximately 9 years old. In both cases the fractures were well healed and perfectly aligned.

Of the 3 fractures which occurred among the adult females, one was on the mid-shaft of the right ulna of a 25-30 year old female; one was on the distal right fibula of a 25-30 year old female; and one was on the distal right fibula of a female approximately 30 years old. In all 3 cases the fractures were well healed. The ulna displayed some signs of misalignment, however, both fibulae were perfectly aligned. In general, it appeared that fractures of the lower limbs were artificially set and consequently displayed lower frequencies of misalignment.

In the 3 adult males with bony traumas, one (aged approximately 32) had a fracture of the distal right fibula; one (aged 35-40 years) had a fracture of the distal left fibula; and one (aged about 28 years) had 2 cranial

injuries. In both cases of trauma to the fibula, the lesions were well healed, had no misalignment, and were probably the result of an accident.

The multiple cranial injury involved 2 major areas of the skull (fig. 4). In the first area, the occipital and portions of both parientals were involved. The lesion broke through the scalp and cranial vault and was probably the result of a blow delivered with a blunt weapon. As a result of the perforation of the scalp an infection developed. There was considerable healing of the infection and the bony lesion, suggesting that the individual survived the blow and probably lived for several months afterwards.

In addition to the first lesion, the individual received a second blow to the right temporal/parietal area. A large area of the temporal and portions of the parietal were fractured.

## CONCLUSIONS

In general, inhabitants of Anderson had a higher frequency of bony trauma (18.2%) than people from Eiden (6.6%). The observed difference was statistically significant at the .05 level ($\chi^2 = 5.02$). Adult males from Anderson had significantly higher frequencies (26.3%) of trauma ($P < .05$; $\chi^2 = 4.39$) than males from Eiden (7.0%). There were no significant differences between the sub-adults of the 2 groups (Anderson = 12.5%, Eiden = 6.5%), or between the females of the 2 groups (Anderson = 11.8%, Eiden = 6.3%). Also, there was no significant difference between the frequencies of males and females within a given group.

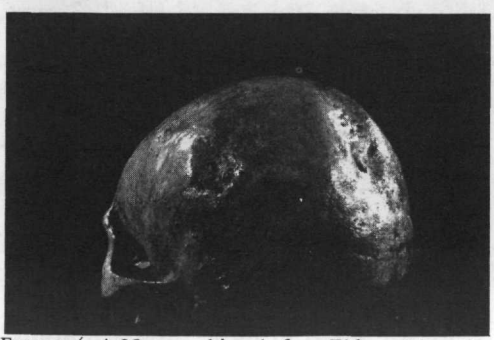

FIGURE 4. A 28-year-old male from Eiden with multiple traumatic lesion of the cranium.

Of the 16 observed cases of trauma in the 2 groups, 18.8% (3) were inflicted through acts of aggression; whereas, 81.2% (13) were the result of accidents. In almost all of the cases the accidents appeared to have been falls. Of the accidental traumas, 68.8% (11) occurred to the lower limbs and 31.2% (5) occurred to the upper limbs. The differences observed between accidental and inflicted trauma, and between lower and upper limbs were not statistically significant. The traumas which occurred on the lower limbs of both males and females displayed less evidence of misalignment than traumas to the upper limbs. The results may suggest that lower limb traumas were artificially treated; whereas, trauma to the upper limbs were not. The traumas to the lower limbs of males may be explained, in part, in terms of the socio-cultural and ecological adaptation of the populations. The lower limb traumas of the males may reflect male role activity associated with subsistence economy (e.g., agricultural activities associated with clearing and preparing the soil), and/or with male role activity in violent sports contests.

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